

## Annual Report

### Small Mammals Conservation and Research Foundation



Annual Report 2012-13



**Cover Photo: Leopard cat trapped in camera in Annapurna Conservation Area (Sagar Dahal)**

## Message from Chair

With the aim of conservation of small mammals', Small Mammal Conservation and Research Foundation (SMCRF) had been established and had made considerable achievement. It has already started the research and conservation work on Bats, Red Panda, Pangolin, Squirrels, Himalayan Marmots, Martins, Pika and other ecological interaction of small mammals and community. The conservation works does not sustain unless local community is awarded about the importance of the small mammals. SMCRF successfully conducted various awareness raising activities such as school children lectures classes, and different research training on small mammal handling, basic statistics training etc. Our objectives are being fulfilled with the support and collaboration of National and International organizations; Particularly, Department of National Park and Wildlife Conservation (DNPWC), Nepal, National Trust for Nature Conservation (NTNC), World Wildlife Fund (WWF) Nepal, Critical Endangered Partnership Fund (CEPF), Himalayan Nature (HN), Zoo outreach, Bat Conservation International (BCI), Rufford Small Grants (RSG) deserves special thanks for their continuous support and enthusiasm.

For the successful completion of fourth year, major contribution goes to its team. Continuous effort for the excellence and all the hardship taken by the team members to establish SMCRF as an organization in such a small time is highly appraised. I love to say this team as a dream team in the field of conservation.

This Annual Report is summarizing few such initiatives. While efforts are put together to make this report more instructive and comprehensive however, there are always space for perfection. Valuable suggestion and comments are solicited for its continued improvements.

Thanking You.

Sanjan Thapa

Chairperson

## **Acknowledgements**

Small Mammals Conservation and Research Foundation is proud to come up with the fourth annual report with another successful year working on conservation activities and scientific researches regarding small mammals. The organization would like to acknowledge everyone who has supported to achieve the goals set and made this year a vital one. Heartfelt gratitude to the advisors, supporting organizations, conservation community and other partners in Nepal. We would like to acknowledge our members and grantees to make this year a successful one.

### **SMCRF Executive Committee 2013**

## **Background**

Small Mammals Conservation and Research Foundation is a non-profit making, nongovernmental organization based at Kathmandu, Nepal. It is registered charity 903/065/066 with Government of Nepal and is also registered at Social Welfare Council (29919). It is dedicated to the conservation and research of small mammals within its priority areas and other potential sites throughout Nepal. Small mammals comprise major proportion (60%) in mammalian diversity of Nepal. But it is still among the least concerned taxa. The research on small mammals is hard to find, so their conservation status are not assessed scientifically on time being. So, the conservation initiative is being made by this organization.

## **Objectives:**

- Fundraising and undertaking projects for conservation initiatives and researches of small mammals
- Organizing workshops/trainings/seminars/community awareness program and conferences regarding small mammals issues
- Publishing relevant articles of different conservationists and researchers through newsletter and journal.
- Supporting freelancers, students, conservationists technically and financially for the conservation and research of the small mammals in the form of thesis/case studies/individual research.
- Respecting conservationists of this field through awards.

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## **1. Research and Conservation Activities**

With the aim to carry out research activities in the field of small mammals and promote conservation of these species through various mediums as public participations conservation education and capacity building for monitoring and conserving small mammals, SMCRF continued its involvement on various such program this year.

### **1.1 Research Activities**

#### **A. Red Panda Survey in Api-nampa Conservation Area- Darchula**

With support from Dublin Zoo, Chester Zoo, Rufford Small grant, a team of SMCRF had been in ANCA, recently declared conservation area in far western part of Nepal for survey of Red Panda presence in the area.

Feasibility study reports (Api Nampa Conservation Area and Kailash Scared Landscape Initiatives) reflect presence of red panda in this area on the basis of focus group discussion. With aim to solve this issues and explore confirm distribution status of red panda, we generalized and identified basic potential distribution ranged VDCs (based on altitude) namely Biyash, Rapla, Sunseira, Kusa and Khandeshwori which need further confirmation through ground based survey as well as community consultations.





### **Regenerated Bamboo forest: Red Panda Habitat**

Ground based survey in contiguous forest patches of Rapla – Biyasa and Rapla-Sunseira were conducted but showed absence of red panda. Additionally, other mammals (musk deer, himalayan shrew, goral, common leopard, Martin and primates) were recorded during field survey. Furthermore, we did consultation with local peoples at Rapla and they were unknown and never notice red panda in their range. Still, we are continuing and focusing our survey in remains VDCs and will come in conclusion at end of 2014.

### **B. Status of Red Panda in Gaurishanker Conservation Area**

With financial support from Rufford Small Grant program, North England Zoological Society and technical support from SMCRF, research and conservation activities were conducted in Gaurishankar Conservation Area in Central Nepal. The project was successful to confirm the presence/distribution status of red panda in nine isolated patches namely: Tatopani, Listikot, Fulpigkatti in Sindupalchock block; Marbu, Kalinchock, Syama, Gaurishankar in Dolkha block and Chuchure in Ramechap block within conservation area.



Sign of Conformation: Red Panda Pellet

### **C. Distribution of Red Panda in Jajarkot District of Western Nepal**

With aims to explore the distribution status on red panda, a field based study was carried out in 2013 and confirmed red panda presence at Nayakwada VDCs in Jajarkot. The study was focused on forest area of Nayakwada Village Development Committee which falls under both community forest and national forests regime.

Based on river system of area, study was conducted in three main blocks namely Karichula-Bhalu Himal, Kote-Lamidada and Bhotegaddi-Jutae Lekha. Evidence based on sign (fecal pellet) and direct animal encounter, presence of red panda was conformed from Karichula, Thupa, Ghateja, Sagabari, Tumtum areas of Karichula-Bhalu Himal where as other possible sites of this block were Burase, Shalim Takuri, Belasuper, Jharauni, Kaldada. In Kote-Lamidada block, we recorded the presence of red panda from Binaetura, Kote Raw, Gobreguard areas and others possible areas were Kuthurae, Ninenae Thura, Khalatakuri, Nilapahar, Lamida.



### **Threats to Red Panda Conservation: a dead Red Panda seized in Jajarkot**

Effort of survey team didn't record any sign of red panda in Bhotegaddi-Lekha, however vegetation and habitat condition reflect positive aspect. During field survey three individuals were sighted in Karichjulai, Thupa and Kote raha. Red panda's sign (fecal pellet) were encountered in elevation of 2900m to 3400 in study area. Higher sign encounter were recorded in Karihula-Bhalu Himal block than Kote-Lamidada block.

A total of 14 tree species were recorded study sites of red panda habitat. Among them, habitat comprised that *Abies spectabilis*, and *Betula utilis* were dominated tree species together with thick patches of bamboo converges. Other associates three species were *Rhododendron arboreum*, *Rhododendron barbatum*, *Rhododendron campanulatum*, *Tsuga dumosa*, *Sorbus cuspidata*, *Taxus wallichiana*, *Sorbus lanata*, *Sorbus microphylla*. Similar to other areas, Red panda faced the problems of illegal hunting, killed by dogs (2 present case), snares, livestock pressure, fire, habitat destruction in study areas.



#### **D. Trade Survey of Pangolin in Eastern Nepal**

A field based survey to determine status of pangolin trade within eastern Nepal, an area vulnerable to pangolins trade. With the support from WWF-Nepal, the team visited four districts (Taplejung, Ilam, Dhankuta and Sankhuwasaba) of eastern Nepal.



#### **Claw of pangolin: An important ethnological component found during survey**

Based on formal interview various aspects of pangolin trade, perception of peoples towards pangolin conservation and ethnological aspect of pangolin in the study area were the main outcomes of the survey. Different threats pertinent to pangolin conservation including illegal trade, habitat destruction and lack of awareness were identified.

#### **E. Camera Trap Survey at Betana Wetland Area, Morang Nepal**

Camera trap survey at Betana Wetland Area was carried on Jan- Feb of 2013 for the survey of small cat presence in and around the wetland and forest area. A jungle cat was trapped.



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**Jungle cat and leopard cat captured at different occasions**

#### **F. Camera Trap Survey At Annapurna Base Camp Trail, Nepal**

Camera trap survey along the trail of Annapurna Conservation Area was carried out on October 2013. Camera traps were deployed on five different sites and a Leopard cat was trapped on Chomrong village along the trail of ABC.

#### G. Study of Golden Jackal on human dominated landscape of Manaslu Conservation Area, Nepal



© Photograph: SMCRF

#### Jackals captured on a camera trap survey for jackals

Camera trap survey was carried on the human dominated landscape of Manaslu Conservation Area. The study found increased in the number of Golden Jackal on the study site of Tsum valley of MCA.

#### H. Collaboration with UK based organization, BioEcoSS for the study of Rodents in Highland Protected Areas

Small Mammals Conservation and Research Foundation collaborated with BioEcoSS for the study of Rodents in Annapurna Base Camp. Simon Poulton, a PhD student of East Anglia University and is leading the study and SMCRF is supporting its expert in the field assistance.





**SMCRF members with foreign delegates**

### **I. Altitudinal variation in bats, Understanding peoples' perception to bats in Sagarmatha (Everest) Zone, Eastern Nepal**

The field based study was performed in Sagarmatha Zone of Eastern Nepal to assess altitudinal variation of bats and to understand peoples' perception about bats in the area. The study presented new evidences of bat distribution regionally and globally. Apart the study presented a low understanding to bats in the study area which was significantly increased to higher level of proper understanding by different conservation awareness during the period.

#### **1.2 Conservation Activities**

Apart from research activities SMCRF has been actively involved in carrying out various conservation activities throughout the country. In continuity of these objectives various conservation programs- educational outreach to students, community and media and community based conservation activities were overtaken during the year.

#### **A. Red Panda Conservation in Gaurishankar Conservation Area: Conservation Awareness in Communities and Schools**

To raise awareness on local people towards red panda, a total of four community programmes were conducted in different areas (Gaurishankar, Marbu, Kalinchock and Ghorthali) that consist of local people and herders. Also, four red panda conservation groups were formed to monitor red panda and to control fuel wood collection, *malingo/malingo* shoot

collection, livestock pressure in red panda habitat. Likewise, conservation classes were carried in four schools covering more than 150 students of secondary level. During conservation classes, art and essay competition were conducted among students and also nature conservation clubs were also formed; aiming to run such conservation activities in futures.



Community programs, art competition and poster for Red Panda Conservation

## B. Pangolin Awareness Programs in Eastern Districts of Nepal

Parallel to conducting trade surveys of pangolin in eastern districts of Nepal, conservation awareness among students, community and media was conducted to educate people about the importance of pangolins in their livelihood.



Pangolin Conservation Awareness Program



### **C. Bat Conservation Awareness in Sagarmatha Zone:**

Apart from the research in bat altitudinal variation and understanding local perception, the study supported by Rufford Small Grants also conducted various conservation awareness programs in the study area. Programs included various aspect of teaching like arts, dramas and documentaries. The local responded well to the teaching and increased their understanding and perception upon these poorly understood group of species.

### **D. Bat Art Exhibition**

Open bat art competition was performed during Bat Survey at Sagarmatha supported by Rufford Small Grants. Thirty arts of total 352 arts were exhibited on March 11. Posters pamphlets and drawing related to various aspects of bats like habitat, popular misconceptions, and their importance in seed pollination.

### **E. Bat Calendar**

Bat calendar exhibiting bat paintings from Bat survey at Sagarmatha Bat Project and important information relating to bats on that particular month was published with support of Rufford Small Grants for the year 2014.

## **2. Trainings**

### **A. Data Analysis Trainings**

SMCRF conducted a data analysis training using SPSS in collaboration with Himalayan Nature. Members of SMCRF and Himalayan Nature were benefited from the program.

### **B. Small Mammals Handling Trainings**

SMCRF conducted a “Small Mammals Handling Techniques” at Central Department of Zoology, Tribhuvan University, Kathmandu. Students at Central Department of Zoology, Central Department of Environment Science, Golden Gate International College, Khowpa College were benefited with various methods of handling techniques for small mammals, data collection methods- camera trapping for small mammals, mist netting techniques for bat, live bait traps for rodents were taught and showed to the students.



### **3. Monitoring Programs**

Apart from its yearly schedule of conducting research and conservational activities, SMCRF, 2013 onward aims for regular monitoring of small mammals inside Kathmandu valley. For the objective, two programs had been started for regular monitoring of these fauna.

#### **A. SMCRF Small Mammals Hiking**

In order to monitor small mammals among various sites within Kathmandu valley, SMCRF has been conducting hiking schedule for those areas. With a prescheduled survey form, small mammals observed during the trips will be recorded and regular monitoring of the fauna in the trip is to be done in future days. Till now six hiking have been done with recording of 12 species of small mammals during the hike.

#### **B. Pteropus Colony Monitoring**

With the aim to monitor *Pteropus* colony within the valley, SMCRF has been conducting monitoring program for *Pteropus*.

#### **4. Theses supported by SMCRF**

SMCRF has been doing financial or technical supports to various Master Level theses related to small mammals which continued in the year 2013 too.

##### **4.1 “Distribution and behavioral ecology of Irrawaddy Squirrel (*Callosciurus pyerythrus*) in urban habitats of Bhaktapur”**

The MSc dissertation presented by Rama Karki to Central Department of Environment Science was supported by SMCRF in the year 2013. The dissertation was aimed to document the presence/absence status, distribution, diurnal behavior, habitat preference and existing threats of squirrel. Nepal harbors 11 species of squirrels: out of them a single species Irrawaddy squirrel occurred in Gundu, Chhaling and Sipadol areas of Bhaktapur districts. In three sites, squirrels were distributed in forest, garden and agricultural habitats. Results showed clumped pattern of distribution in the study area. High visual encounter of squirrels were noted in Chhaling area and selected for behavioral study. Running, forage, eat/handling, rest, play and limb stand were identified as diurnal activities of squirrel which was that squirrel spend most of their time in running and least in playing. Squirrel's food consists of fruits, cereals, plants parts, nuts or seeds, tuber, moss and few unidentified items. Squirrels consumed fruits category in highest and tuber in least. Squirrels preferred bamboo mixed forest. Killings, habitat destruction, fire, wild/domestic predator, livestock grazing, were the major threats of squirrels in the study sites.

##### **4.2 “Conservation Status of Fishing Cat in Chitwan National Park, Nepal”**

MSc dissertation presented by Rama Mishra to Central Department of Zoology was performed under technical support of SMCRF. The dissertation was aimed to assess the status and threats to the fishing cat and associated small carnivores in CNP. This study reported on systematic camera trap, sign and community based survey results. From a total survey effort of 868 camera trap days across a total area of 160 km<sup>2</sup>, 19 photographs of fishing cats were obtained in six independent events with five individuals identified from three locations. Two different methods i.e. capture recapture analysis on CAPTURE program and spatially explicit capture recapture using SPACECAP software were used for population estimation whereas

density was calculated only from the SPACECAP. Capture-recapture analysis estimated seven individuals (95% CI 6 – 23) with a density estimate of 4.37 individual/100 km<sup>2</sup>. The analysis from SPACECAP using spatially explicit capture recapture estimated the population of the fishing cat in CNP as 17.74 (95% CI 9 – 25) with a density of 6.06 animals / 100 km<sup>2</sup> for suitable habitat. Sign surveys showed a patchy distribution across potential habitats from Narayani river in the west to Amrite in the northeast and Thori in the southeast. The majority of the detections were in wetlands with surrounding grassland areas of average height 1-2 m indicating the most favorable habitats of fishing cats. A total of 26 species of mammals including nine species of small carnivores (small cats, civets and mongoose) were recorded on the camera traps. Targeted community interview surveys indicate habitat loss due to shrinkage of wetlands as the main threat to the fishing cat.

#### **4.3 “Food Habits Of Insectivorous Bats Of Mahendra And Nagarjun Caves, Nepal.”**

MSc dissertation presented by Mrs Santosh Pokherel was performed under financial support from SMCRF. The dissertation aimed to access food habits and diversity of these food in the diet of bats. The study discussed food habits of bats of Mahendra Cave, Pokhara and Nagarjun Cave Kathmandu using fecal analysis; three white polythene plastic sheets (1mx1m) were placed for 24 hours under the roosting sites of each cave on starting and ending days of March and September of 2011 to collect fresh bat droppings. All together 120 droppings (60 from each cave) were randomly selected, observed under stereoscope to identify insects order and families. Altogether ten insects orders were reported viz Coleoptera, Diptera, Hemiptera, Homoptera, Hymenoptera, Lepidoptera, Odonata, Orthoptera, Tricoptera and Thysanoptera. The identified families were included highest in Diptera (seven families), following Coleopteran (six families), Orthoptera (five families) Hymenoptera (three families), Hemiptera (three families) and Thysanoptera (one family). In addition, spiders and mites were also reported. The percentage volume of the diet contained highest food items in Coleoptera (35.35%) and Orthoptera (24%) in spring and autumn respectively in Mahendra Cave. The other insects were Hymenoptera, Diptera, Hemiptera, Homoptera, Lepidoptera, Hymenoptera and Trichoptera. But in Nagarjun cave, Diptera was major portion of the diet in spring (28%) and autumn (24%).

The other food items belong to Orthoptera, Thysanoptera, Coleoptera, Hymenoptera including spiders and mites.

In Mahendra Cave, an average percentage of frequency of Coleopteran food items contained 63.33% followed by Orthoptera (46.66%) in spring. But Orthoptera occupied (50%) followed by Coleoptera (26.66%) in autumn. In Nagarjun Cave, Diptera was highest both seasons. The diversity of insects consumed in autumn and spring in Mahendra Cave was more or less similar ( $H' = 0.77$  and  $H' = 0.70$ ) with Nagarjun Cave ( $H' = 0.76$  and  $H' = 0.71$ ) respectively.

#### 4.4 “Seasonal Variation in Abundance and Distribution of Bats in Sunsari-Morang Industrial Corridor”

The thesis presented by Dibya Raj Dahal to Central department of Zoology was conducted in urban settings of Eastern Nepal under technical guidance of SMCRF.

The study presented the seasonal variation in abundance and distribution of bats in Sunsari-Morang industrial corridor. The main objective of the research was to investigate seasonal and spatial variations in bat diversity in A. Ithari, B. Khanar C. Duhabi, D. Hattimuda and E. Tankisiniwari. Specific objectives were to determine species diversity, examine their abundance and distribution, and to analyze anthropogenic threats on them. The populations of bats were counted and collected by roost survey, mist netting and photographs. Most of species were identified by morphometric measurements and it is done with the help of the standard taxonomic keys (Bates and Harrison 1997 and Srinivasulu et al. 2010). *Scotophilicullus kuhli* was identified by skull and baculum morphology structure. Total seven species of bats were recorded in Sunsari-Morang industrial corridor. Within seven species albino of *Cynopterus sphinx* was observation and collected as the first record of albino bat, similarly *Scotophilus kuhli* was confirmed for the Nepal. The primary data were collected by roost survey; moist netting and simple hygrometer reading and collected data were analyzed through parametric and nonparametric test by using SPSS version 16. Population densities fluctuate seasonally responding to temperature variation but the species diversity was the same in all seasons. Anthropogenic factors like deforestation, killing for bush meat, urbanization, and use of pesticide were recorded as direct threats to the population density and species diversity of bats

in the industrial corridor. This study showed that Sunsari-Morang industrial corridor area is a potential site for bat conservation with high diversity and good population size. Awareness campaign, support from the community, and government initiatives are necessary to conserve these ecologically and economically beneficial species of bats.